

## Engineering Conferences International ECI Digital Archives

---

Integrated Continuous Biomanufacturing II

Proceedings

---

Fall 11-3-2015

# Integrated continuous processing for the manufacture of monoclonal antibodies

Daniel Karst

*Institute for Chemical and Bioengineering, Department of Chemistry and Applied Biosciences, ETH Zürich*

Fabian Steinenbach

*Institute for Chemical and Bioengineering, Department of Chemistry and Applied Biosciences, ETH Zürich*

Massimo Morbidelli

*Institute for Chemical and Bioengineering, Department of Chemistry and Applied Biosciences, ETH Zürich*

Follow this and additional works at: [http://dc.engconfintl.org/biomanufact\\_ii](http://dc.engconfintl.org/biomanufact_ii)



Part of the [Biomedical Engineering and Bioengineering Commons](#)

---

### Recommended Citation

Daniel Karst, Fabian Steinenbach, and Massimo Morbidelli, "Integrated continuous processing for the manufacture of monoclonal antibodies" in "Integrated Continuous Biomanufacturing II", Chetan Goudar, Amgen Inc. Suzanne Farid, University College London Christopher Hwang, Genzyme-Sanofi Karol Lacki, Novo Nordisk Eds, ECI Symposium Series, (2015). [http://dc.engconfintl.org/biomanufact\\_ii/78](http://dc.engconfintl.org/biomanufact_ii/78)

This Conference Proceeding is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in Integrated Continuous Biomanufacturing II by an authorized administrator of ECI Digital Archives. For more information, please contact [franco@bepress.com](mailto:franco@bepress.com).

# **Integrated Continuous Processing for the Manufacture of Monoclonal Antibodies**

*Daniel Karst, Fabian Steinebach and Massimo Morbidelli*

*Institute for Chemical and Bioengineering, Department of Chemistry and Applied  
Biosciences, ETH Zürich, CH-8093 Zürich, Switzerland*

Continuous manufacturing is currently being considered by the Biopharmaceutical Industry not only for the classical reasons which make continuous operation preferred over the batch one, but also for recent initiatives of the regulatory agencies. We discuss here a series of experiments where a perfusion reactor with CHO cells for the production of a monoclonal antibody has been operated in the continuous mode and connected to a two column continuous protein A chromatographic unit for product capture. A few steady states are examined and the use of simulation models for process design and control is illustrated.